OIB - DC-8 10/26/14 Science Report

Aircraft:
DC-8 (See full schedule)
Date:
Sunday, October 26, 2014
Mission:
OIB
Mission Location:
Antarctica
Mission Summary:

F06 Pole Hole 88 West

Accomplishments

- Low-altitude survey (1,500 ft AGL) along 88ºS.
- ATM, albedo, KT-19, snow, Ku-band, MCoRDS, gravimeter, and DMS were operated on the survey lines.
- Ramp pass at Punta Arenas after takeoff at 1,300 ft AGL.
- Satellite tracks: samples half of all future ICESat-2 tracks and half of all CryoSat-2 tracks
- Repeat Mission: new mission.

Instrument	Operated	Data Volume	Instrument Issues/Comments
ATM	yes	15 GB	None.
CAMBOT	yes	32 GB	None.
DMS	yes	55.6 GB	UPS for Applanix failed causing 2 minutes of data outage shortly after takeoff. DMS will use ATM Applanix data for processing. Recorded 4,321 frames.
Snow Radar	yes	134 GB	None. The first 84 files (out of 624) were not written to disk resulting in a 14 minute data loss at the beginning of the survey line.
Ku-band Radar	yes	134 GB	Same as for snow radar.
MCoRDS	yes	1.4 TB	None.
KT-19	yes	10 MB	None.
Albedo	yes	1.1 GB	None.
Albedo camera	yes	150 MB	None.
Gravimeter	yes	1 GB	The gravimeter experienced a system failure half way around the 88ºS circle resulting in loss of data for the remainder of the flight.

Mission Report (Michael Studinger, Mission Scientist)

Today's mission plan is a new design, and its purpose is to sample the surface topography at the southern apex of half of all planned ICESat-2 orbits. Specifically, this flight samples the ground tracks on the western side of the Pole. In this way, we can provide ?ground truth? for every ICESat-2 orbit with just two flights, including Pole Hole 88º East as well as this one. The vertical stability of the surface must also be quantified for this approach to succeed, and this flight provides a baseline measurement for this purpose. In addition to this 88ºS also covers all the CryoSat-2 orbits.

Today?s decision to fly the western part of the circle around 88°S was by far the easiest weather call on this deployment. We quickly eliminated most other areas except for Hull Land during the weather brief this morning. Satellite images, GFS

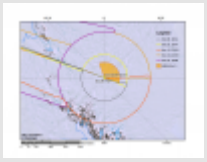
and AMPS model, as well as the forecast from the Chilean Antarctic Base Eduardo Frei, indicated scattered low clouds at 1,500 ft AGL and therefore conditions that are high risk for a science flight, in particular given the terrain in the survey area. South Pole on the other hand was sky clear with perfect conditions. This was the first ?baseline? mission of the land ice flights today, the mission plans that have the highest priority. We have been to the geographic South Pole twice this week and have flown a complete 360° circle along 88°S and covered not only all future ICESat-2 orbits, but also all current CryoSat-2 orbits. This is a tremendous data set for future ICESat-2 calibration and validation as well as for CryoSat-2.

We flew directly over South Pole at 19:01:40 UTC at 32,000 ft MSL. We turned off all radars and LiDARs 60 nm before the Pole and switch them back on 60 nm behind the Pole in order to avoid potential interference with any measurements on the ground. When we reached the corner of the Clean Air Sector (ASMA #5) the radar altimeter showed us at 15,000 ft AGL and climbing, and therefore well above the 6,000 ft AGL overflight restriction.

LiDAR data collection started at 10/26/2014 17:04 UTC and ended at 18:45 UTC. In total we collected 1.7 hours of LiDAR data. ATM recorded 100% surface returns in perfect conditions.

Images:

Figure 1: Today's trajectory in yellow.



Read more

Figure 2: Obligatory DMS image from 32,000 ft MSL of Scott-Amundsen

Read more

Submitted by:
Michael Studinger on 10/26/14
Related Flight Report:

DC-8 10/26/14 - 10/27/14

Flight Number:
150111
Payload Configuration:
Operation IceBridge 2014
Nav Data Collected:
Yes
Total Flight Time:
11.9 hours
Submitted by:
Frank Cutler on 10/27/14
Flight Segments:

From:	SCCI	**To:**	SCCI
Start:	10/26/14 12:12 Z	**Finish:**	10/27/14 01:39 Z
Flight Time:	11.9 hours		
Log Number:	158003	**PI:**	Michael Studinger
Funding Source:	Bruce Tagg - NASA - SMD - ESD Airborne Science Program		
Purpose of Flight:	Science		
Comments:	Pole Hole West at 1,500 ft AGL		

Flight Hour Summary:

	158003
Flight Hours Approved in SOFRS	300
Total Used	292.1
Total Remaining	7.9

158003 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining
10/06/14	150101	Science	1.2	1.2	298.8
10/07/14 - 10/08/14	150102	Science	5.2	6.4	293.6
10/08/14	150103	Science	3.7	10.1	289.9
10/13/14	150104	Transit	10.4	20.5	279.5
10/13/14	150105	Transit	3.2	23.7	276.3
10/16/14	150106	Science	11	34.7	265.3
10/18/14 - 10/19/14	150107	Science	11.9	46.6	253.4
10/20/14	150108	Science	11.7	58.3	241.7
10/23/14	150109	Science	11.8	70.1	229.9
10/25/14	150110	Science	11.4	81.5	218.5
10/26/14 - 10/27/14	150111	Science	11.9	93.4	206.6
10/28/14	150112	Science	11.5	104.9	195.1
10/29/14	150113	Science	10.9	115.8	184.2
10/31/14	150114	Maintenance	2.8	118.6	181.4
11/01/14	150115	Maintenance	3	121.6	178.4
11/02/14	150116	Science	10.9	132.5	167.5
11/03/14	150117	Science	11.1	143.6	156.4
11/05/14	150118	Science	11.4	155	145
11/06/14	150119	Science	11.1	166.1	133.9
11/07/14	150120	Science	10.9	177	123
11/08/14	150121	Science	11.4	188.4	111.6
11/10/14	150122	Science	11.2	199.6	100.4
11/11/14	150123	Science	11.2	210.8	89.2
11/13/14	150124	Science	11.4	222.2	77.8
11/14/14	150125	Science	11.5	233.7	66.3
11/15/14	150126	Science	11.2	244.9	55.1
11/16/14	150127	Science	11.1	256	44
11/21/14	150128	Science	11.2	267.2	32.8
11/22/14	150129	Science	10.8	278	22
11/24/14	150130	Transit	2.9	280.9	19.1
11/25/14 - 11/26/14	150131	Transit	11.2	292.1	7.9

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

Tagg

- Budgets, Strategic Plans and Accountability Reports
- Equal Employment Opportunity Data Posted Pursuant to the No Fear Act
- Information-Dissemination Policies and Inventories

- Freedom of Information Act
- Privacy Policy & Important Notices
- NASA Advisory Council
- Inspector General Hotline
- Office of the Inspector General
- NASA Communications Policy

- Contact NASA
- Site Map
- USA.gov
- Open Government at NASA
